

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
10 February 2005 (10.02.2005)

PCT

(10) International Publication Number
WO 2005/012755 A1

(51) International Patent Classification⁷: **F16D 65/21**,
65/34, 65/35, 55/02, B60T 13/74, 7/08, F16H 25/18, 25/24

(21) International Application Number:
PCT/AU2004/001007

(22) International Filing Date: 28 July 2004 (28.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003903927 28 July 2003 (28.07.2003) AU

(71) Applicant (for all designated States except US): **PBR AUSTRALIA PTY LTD** [AU/AU]; 264 East Boundary Road, East Bentleigh, Victoria 3165 (AU).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **WANG, Nul** [AU/AU]; 12 Tavistock Court, Croydon, Victoria 3136 (AU).

(74) Agent: **PHILLIPS ORMONDE & FITZPATRICK**; 367 Collins Street, Melbourne, Victoria 3000 (AU).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

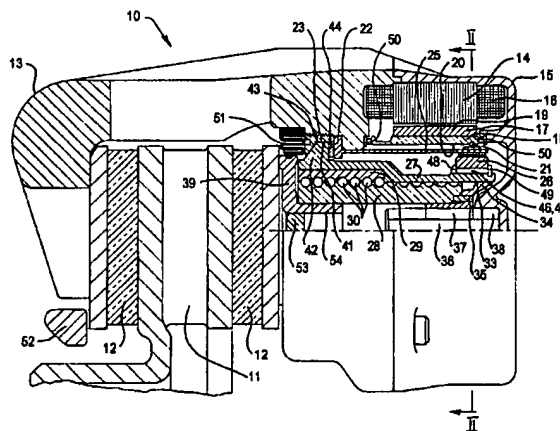
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **ACTUATOR AND BRAKE ASSEMBLY**



(57) Abstract: An actuator, including an electric motor (14) having a stator (16) and a rotor (17), in which the rotor (17) defines a bearing surface (20) having a non-circular profile, and a radially flexible annular sleeve (24) defines a facing bearing surface. The flexible sleeve (24) adopts a non-circular shape complementary to the profile of the bearing surface (20). The flexible sleeve (24) is restrained against rotation and is in toothed meshing engagement with a circular drive ring (26) at least two contact regions which are equidistantly spaced apart. The drive ring (26) is rotationally engaged with a screw and threaded sleeve assembly, such that rotation of the drive ring (26) drives the screw and sleeve assembly and causes extension or withdrawal of an output portion (28) of the screw and sleeve assembly for actuation. The actuator is operable such that rotation of the rotor (17) causes the flexible sleeve (24) to flex radially at each of the contact regions to generate a rolling wave which causes rotation of the contact regions and of the drive ring (26), and the drive ring (26) rotates at a reduced rotational velocity as compared to the rotational velocity of the rotor (17).